

### Abstract of the Disclosure

A system and associated method for the synchronization and control of multiplexed payloads over a telecommunications network wherein the asynchronous timing relationships between multiplexed payloads having varied points of origin are retained subsequent to signal processing of the payloads for further transmission to a destination point. System modules 22 include a network interface section 30, a synchronization, multiplexing and control (SMC) section 50, and a processing section 110. The SMC section 50 includes network interface bus circuitry, payload segmentation and re-assembly circuitry, control and management memory and related circuitry, payload re-assembly circuitry, and processor bus interface circuitry. The processing section of module 22 provides means for data compression, echo cancellation, error correction coding, or voice and data encryption/decryption. The module 22 is dynamically configured through a software management and control interface. The software permits dynamic loading of module 22 control logic and provides inband interpretation of performance statistics. Differing sets of control parameters are supplied to the module 22 as dictated by the interpretation of network performance parameters, or through operator supplied modifications. Operator modifications are preferably facilitated through an attached GUI (Graphical User Interface) and associated input devices such as a keyboard and/or mouse.